



100 GROVE ST. | WORCESTER, MA 01605

June 5, 2023

Grafton Planning Board
Grafton Planning Department
30 Providence Road
Grafton, MA 01519

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gravesengineering.com

**Subject: Abby Woods Subdivision
Updated Engineer's Opinion Construction Cost Estimates**

Dear Board Members:

Per the request of the Grafton Planning Board, Graves Engineering, Inc. (GEI) has updated our previous "work remaining" engineer's opinion construction cost estimate for the Abby Woods Subdivision in Grafton, Massachusetts. The updated estimate supersedes our previous "work remaining" estimate dated October 11, 2022.

Please find attached the point-by-point totals of the "work remaining" and "100% cost-to-construct" cost estimates based upon the following:

- The estimates are based upon the plan set entitled Abby Woods, 18 Carroll Road, A definitive Subdivision in North Grafton, Massachusetts dated February 11, 2020, prepared by HS&T Group, Inc.
- The estimates consist of work associated with on-site road and infrastructure construction beginning at station 0+00 (Carroll Road). The estimates do not include any of the proposed work associated with lot development nor within Carroll Road.
- GEI performed an engineer's opinion construction cost estimate for the Conservation Commission on December 4, 2020. Overlapping line items have been adjusted to account for work covered under the Conservation Commission's bond surety. It is GEI's understanding that the necessary funds have been procured by the Conservation Commission.
- To further clarify the overlapping items, line items have been denoted with ¹ or ² to signify that an adjustment was made to account for the amount held under Conservation Commission's surety. A ¹ signifies that the work remaining is entirely covered under the Conservation Commission's surety. Whereas a ² signifies that a portion of the work is covered under the Conservation Commission's surety (e.g., sediment and erosion controls section, silt fence & straw wattle – maintain; 720 linear feet covered under Conservation Commission surety versus the 1,400 linear feet total).
- Site visits were performed by GEI through May 18, 2023 to determine work remaining.
- During our most recent site visit, GEI noted that the constructed infiltration basin was still undersized. The approved basin is 115 feet by 76 feet measured from the interior of the top of berm, however the constructed basin was measured to be approximately 80 feet by 40 feet. As such, line items to complete the work have been adjusted accordingly for items in place that would need to be modified during reconstruction (e.g., emergency spillway, etc.).

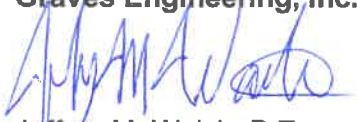
- There has been a 20% administration and contingency added to the "work remaining" estimate for inspections, contract administration and inflation.

The purpose of our construction cost estimates is to provide the Grafton Planning Board with an "engineer's opinion" of the possible construction value for the project. Our estimates are based upon typical municipally bid public works projects subject to state wage rates. We use state wage rates as the municipality will be required to pay prevailing state wage rates should they ultimately become responsible for completing the project. The rates indicated within this estimate reflect current market conditions.

In addition, the "work remaining" construction estimate should not be construed to be a final punch list of items that are not complete. At each drawdown requested by the developer, individual line items will be evaluated for completeness, unit prices for each item revised to reflect the current cost of work, and additional items added or deleted from the estimate, if needed. Streets and applicable amenities are not considered complete until a determination is made by the Grafton Planning Board.

If you have any questions or comments concerning these cost estimates, please feel free to contact our office.

Very truly yours,
Graves Engineering, Inc.



Jeffrey M. Walsh, P.E.
Principal

Attachments:
Engineer's Opinion Construction Cost Estimate

cc: Abby Rad; Pro Tech, Inc.



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**SITE DEVELOPMENT/SUBDIVISION
CONSTRUCTION BUDGET**

**PROJECT: ABBY WOODS
ABBY ROAD STATION 0+00 TO 5+53**

DATE: June 5, 2023

Budgets of work for the entire project and for work yet to be completed.

The following construction budget is based upon the Definitive Plan last revised:

05/18/23

This estimate is based upon site visits performed through:

09/27/22

			100% COST ESTIMATE		CONSTRUCTION	
	UNITS	\$/UNIT	QUANTITY	VALUE	REMAIN'G QUANTITY	05/18/23 VALUE
RIGHT OF WAY						
Finish Grading (Grass plots only)	Sq. Yds.	\$5.00	1,100	\$5,500.00	1,100	\$5,500.00
Spread Loam ¹	Sq. Yds.	\$3.00	1,100	\$3,300.00	0	\$0.00
Hydroseeding ¹	Sq. Yds.	\$2.00	1,100	\$2,200.00	0	\$0.00
Trees	Each	\$400.00	27	\$10,800.00	27	\$10,800.00
ROADWAY						
Excavation	Cu. Yds.	\$37.00	5,100	\$188,700.00	0	\$0.00
Prep Subgrade	Sq. Yds.	\$5.00	1,800	\$9,000.00	0	\$0.00
Gravel Base (12")	Cu. Yds.	\$45.00	600	\$27,000.00	0	\$0.00
Fine Grade & Roll	Sq. Yds.	\$6.00	1,800	\$10,800.00	0	\$0.00
Binder Course (2.75" Compacted Thk'ness)	Tons	\$120.00	275	\$33,000.00	0	\$0.00
Top Course (1.5" Compacted Thk'ness)	Tons	\$125.00	150	\$18,750.00	150	\$18,750.00
Granite Transition Pieces	Each	\$320.00	8	\$2,560.00	8	\$2,560.00
Granite Curb Inlets - Straight	Each	\$480.00	2	\$960.00	2	\$960.00
Granite Curb Inlets - Curved	Each	\$550.00	2	\$1,100.00	2	\$1,100.00
Granite Curb - Straight	Lin. Ft.	\$52.83	250	\$13,207.50	250	\$13,207.50
Granite Curb - Curved	Lin. Ft.	\$60.00	300	\$18,000.00	300	\$18,000.00
Cape Cod Berm	Lin. Ft.	\$8.00	455	\$3,640.00	455	\$3,640.00
Street Lights	Each	\$4,200.00	3	\$12,600.00	3	\$12,600.00
Raise Structures (Sewers, Drains, etc.)	Each	\$425.00	11	\$4,675.00	11	\$4,675.00
Asphalt Emulsion (Tack Coat)	Gal.	\$8.00	90	\$720.00	90	\$720.00
Street Name Sign	Each	\$125.00	1	\$125.00	1	\$125.00
Stop Sign	Each	\$125.00	1	\$125.00	1	\$125.00
SITE WORK						
Excavation ²	Cu. Yds.	\$37.00	350	\$12,950.00	45	\$1,665.00
Finish Grading (slopes outside ROW)	Sq. Yds.	\$5.00	420	\$2,100.00	420	\$2,100.00
Spread Loam (slopes outside ROW) ¹	Sq. Yds.	\$3.00	420	\$1,260.00	0	\$0.00
Hydroseeding (slopes outside ROW) ¹	Sq. Yds.	\$2.00	420	\$840.00	0	\$0.00
SIDEWALK						
Prep Subgrade	Sq. Yds.	\$5.00	280	\$1,400.00	280	\$1,400.00
Gravel Base (6")	Cu. Yds.	\$45.00	50	\$2,250.00	50	\$2,250.00
Fine Grade & Roll	Sq. Yds.	\$6.00	280	\$1,680.00	280	\$1,680.00
Concrete Cement Pavement	Sq. Yds.	\$85.00	280	\$23,800.00	280	\$23,800.00
Detectable Warning Pad (Ramp)	Each	\$300.00	2	\$600.00	2	\$600.00

			100% COST ESTIMATE		CONSTRUCTION	
	UNITS	\$/UNIT	QUANTITY	VALUE	REMAIN'G QUANTITY	05/18/23 VALUE
DRAINAGE						
8" PVC	Lin. Ft.	\$127.50	75	\$9,562.50	0	\$0.00
12" RCP	Lin. Ft.	\$100.00	55	\$5,500.00	0	\$0.00
12" Class V RCP	Lin. Ft.	\$100.00	45	\$4,500.00	0	\$0.00
18" RCP	Lin. Ft.	\$117.00	210	\$24,570.00	0	\$0.00
18" Class V RCP	Lin. Ft.	\$116.50	65	\$7,572.50	0	\$0.00
Drain Manholes	Each	\$5,000.00	4	\$20,000.00	0	\$0.00
Drain Invert (Concrete or Brick)	Each	\$300.00	4	\$1,200.00	4	\$1,200.00
Catch Basins	Each	\$4,500.00	8	\$36,000.00	0	\$0.00
Catch Basin Frame & Grate	Each	\$950.00	8	\$7,600.00	8	\$7,600.00
Drain Manhole Rim & Cover (24")	Each	\$900.00	4	\$3,600.00	4	\$3,600.00
18" RCP Flared End Section	Each	\$1,693.13	1	\$1,693.13	0	\$0.00
Stormwater Treatment Units	Each	\$18,000.00	2	\$36,000.00	0	\$0.00
INFILTRATION BASIN						
Excavation ^c	Cu. Yds.	\$37.00	990	\$36,630.00	390	\$14,430.00
Finish Grading (Basin)	Sq. Yds.	\$5.00	990	\$4,950.00	990	\$4,950.00
Finish Grading (Access Road)	Sq. Yds.	\$5.00	170	\$850.00	170	\$850.00
Spread Loam ⁱ	Sq. Yds.	\$3.00	990	\$2,970.00	0	\$0.00
Hydroseeding ⁱ	Sq. Yds.	\$2.00	990	\$1,980.00	0	\$0.00
18" RCP Flared End Section	Each	\$1,693.13	1	\$1,693.13	0	\$0.00
18" RCP (FES Connections)	Lin. Ft.	\$117.00	30	\$3,510.00	0	\$0.00
Rip-Rap ⁱ	Cu. Yds.	\$89.00	30	\$2,670.00	0	\$0.00
Spillway ^c	Cu. Yds.	\$89.00	22	\$1,958.00	10	\$890.00
Gabion Forebay	Tons	\$50.00	15	\$750.00	7	\$350.00
Gravel (Access Road)	Cu. Yds.	\$45.00	200	\$190.00	120	\$5,400.00
48" High Chain Link Fence	Lin. Ft.	\$65.08	530	\$34,492.40	530	\$34,492.40
48" Chain Link Gate With Gate Posts	Lin. Ft.	\$290.00	20	\$5,800.00	20	\$5,800.00
WATER						
8" CL DI Pipe	Lin. Ft.	\$165.00	540	\$89,100.00	0	\$0.00
Hydrants	Each	\$6,000.00	1	\$6,000.00	0	\$0.00
Water Gates & Box (8-inch)	Each	\$500.00	1	\$500.00	0	\$0.00
SEWER						
8" PVC Pipe	Lin. Ft.	\$127.50	490	\$62,475.00	0	\$0.00
Sewer Manholes	Each	\$6,750.00	3	\$20,250.00	0	\$0.00
Sewer Brick Invert	Each	\$400.00	3	\$1,200.00	1	\$400.00
Sewer Manhole Rim & Cover (30")	Each	\$900.00	3	\$2,700.00	1	\$900.00
STONE-LINED SWALE						
Excavation	Cu. Yds.	\$37.00	140	\$5,180.00	140	\$5,180.00
Finish Grading	Sq. Yds.	\$5.00	675	\$3,375.00	675	\$3,375.00
Crushed Stone	Tons	\$50.00	65	\$3,250.00	65	\$3,250.00
12" Class V RCP	Lin. Ft.	\$100.00	140	\$14,000.00	140	\$14,000.00
12" RCP Flared End Section	Each	\$1,400.00	16	\$22,400.00	16	\$22,400.00
SEDIMENT AND EROSION CONTROLS						
Construction Entrance (Crushed Aggregate)	Tons	\$50.00	16	\$800.00	0	\$0.00
Silt Fence & Straw Wattle - Install	Lin. Ft.	\$10.00	1,400	\$14,000.00	0	\$0.00
Silt Fence & Straw Wattle - Maintain ^c	Lin. Ft.	\$5.00	0	\$0.00	680	\$3,400.00

			100% COST ESTIMATE		CONSTRUCTION	
	UNITS	\$/UNIT	QUANTITY	VALUE	REMAIN'G QUANTITY	05/18/23 VALUE
ELECTRIC COMMUNICATIONS						
Electrical/CATV/Tel Conduit	Lin.Ft.	\$65.00	650	\$42,250.00	0	\$0.00
MISCELLANEOUS						
Bounds, Granite (Roadway)	Each	\$667.00	8	\$5,336.00	8	\$5,336.00
Bounds, Granite (Easements)	Each	\$667.00	13	\$8,671.00	13	\$8,671.00
Acceptance Plans	Sheet	\$1,500.00	2	\$3,000.00	2	\$3,000.00
As Built Plans	Sheet	\$1,900.00	3	\$5,700.00	3	\$5,700.00
Subtotal:				\$980,071.16		\$281,431.90
20% Contingency/Administration:						\$56,286.38
PROJECT: ABBY WOODS				TOTAL:		\$337,718.28
TOTAL (Rounded):					*	\$338,000.00
20% of "100% COST ESTIMATE" (Rounded):				*	\$196,000.00	
* This estimate was prepared to assist the Planning Board with establishing the amount of surety for this project. In accordance with Grafton Subdivision Rules and Regulations, the surety value established by the Board may vary from this estimate.						
¹ These line items are covered in their entirety by the Conservation Commission surety.						
² These line items have been adjusted to remove the amount covered under the Conservation Commission surety.						